## Notebook, PN-05-02-07

This pocket notebook was used by Edison during the period November 1904-February 1905 for notes on experimental work and for lists of tasks to be performed. Many of the proposed experiments pertain to the chemical composition, construction, and charge and discharge conditions of storage batteries. Included are entries describing groups of test cells, some with nickel flake elements in their electrodes. There is also a note by Edison reminding himself to see Frank L. Dyer about filing a patent application on the nickel flake. Among the employees mentioned in relation to individual experiments are Ralph Arbogast, Jonas W. Aylsworth, and Walter E. Holland. The pages are unnumbered. Approximately 50 pages have been used.

1000 ৫৫৭ =

3600 ) 100 000 - (27
92 000
28,000

3600
20
72,000

PN-05-02-07

Precip with 90% Ni
10% of following
Wash Hole exceed KOH
then fuse in Solid KOH
to deliquesce
Bi Mn Fe Mg Al Zn
Co Cu Ag Pb & in fact all
the metals — 604 —

Also with 90% Nitrate
Ni add 10% of Nitrate
of other metals giving
up + oxide to Ni(OH)3
Reduce with various
reducers & by graft
604 —

Soak Deliquesced
Ni OH bath by fusion
KOH + bag metals equal
precipitated with
all the metals & precip
whole in Dangerous
to get a OH for the
analysis Ni

Chloride Ni dissolved
in Ether, or non water solvent
& then heated with metallic
Sodium to get Ni O —

Perhaps $Ni(OH)_2$
formed in acid
Sol will be different
~~above~~ from those prep
by KOH —

Perhaps base of
Mauvine or related
organic base
prep $Ni(OH)_2$ —

Distill Carmoisin
or Lanolin with
Chl Zinc mixed
get high BP
~~Hydro carbon~~

Got some Sludge a
Bull S & dif
asphalts, Texas
Canada/Lima
& California petroleum
distillate —

~~Jumpers use No 4~~
~~also large hole~~
~~[illegible]~~

What is voltage between
2 nickel strips alone
in KOH, Charging

also Get Ni Cup+
Nitrate also Fe Cup+
Ni strip

~~Daily make enough~~
~~glass Ball Valve all~~
~~open centers~~
~~John all Cobalt Bore~~
~~Separator Cup~~
~~Put all centers~~
~~& get results~~

~~Ditto Silvered Connecting~~
~~& No 4 Jumpers~~

~~Try Reversing an individually~~

~~Try an original good cell which by long running has gone down again by addition of $H_2O_2$ to ·01 Dilution & see if it shows Coming up~~

Chg voltage between 2 plain Ni strips 2.02 about depdg on rate
300 Rate

Chg voltage bet Ni pocket and plain Ni strip 1.76 at 350 rate.
Ni pocket fully charged —
Chg voltage bet Fe pocket & plain Ni strip 180 at 350 rate, Fe fully charged.

| | | |
|---|---|---|
| Ni pocket Ni strip<br>150 Rate = 50 rate | | ·42 Volt chg<br>74 |
| Fe pocket Ni strip<br>150 rate at 50 rate | | ·108 Volt chg<br>66 |
| Above cell was discharged to ·50, & then put on at 150 rate, | | |
| 2 Ni strips, at 150 rate<br>50<br>70 | | 230 volt chg<br>219<br>230 |

1 model H 18
2 " H 27
3 " H 36
4 " H 45
~~5 new gas vent non-slop~~
6 supply varnish - gallon cans
~~7 4 plating machines~~
~~8 Pat'd Roller - house~~
9 Automobile shed
10 Skylights new assembling room
~~11 Seam welding machine~~
12 supply electric water filters
13 Block insulators E 18
14 " " E 27
15 " " E 45
17 " " H E 18
18 " " H 27
19 " " H 36
20 " " H 45
~~21 stop building cons outward~~
~~22 Test new Pittsburgh stock~~
~~23 weld cement cable~~
~~24 Ottawa for Cement roll~~
25 Can Tools H cells
26 supply lead glucose tools
27 filtering KOH oiled Marquette

28 Overfoaming cells
29 Fix up Auto batteries
30 ~~New Lament cable single splice~~
31 Insert wires motor flexibles
32 " " Gandy belts
33 ~~Get sheet rubber from Amer Hff Co~~
34 Hester charge Pam Am To Electric
35 How about anode furnace
36 ~~" Test Shun / Studebaker battery~~
37 ~~Get Johns washing Mc Cracken~~
38 ~~Ask Fleis about Adams new battery~~
39 ~~" Ron about " " Sloanes~~
40 ~~Hurry up Iron reduction pots~~
41 ~~" " annealing "~~
42 ~~When annual set up new dishwasher~~
43 Hester Belt Con design replace Elev 2
44 " 3rd fine grinder etc
45 " Increase coal grinding
46 Randolph send check Jutilong
47 Drawings H trays for nickel trade
48 ~~Changing present E trays~~
49 ~~New glass side Ni filler~~
50 " Ni filling machine
51 " Ni Crimp die
52 ~~Attention detach cell non return use~~
53 ~~Non vibration Ni plating programs~~

54 Barnes varnish trays
55 Buttons for holding Top Cells
56 Jig drill for buttons,
57 ~~15 & 27 for fanden~~
58 ~~old Baker get in order~~
59 ~~Mud guards fanaden~~
60 Fix switches at stable
61 weld strips for plating
62 " pieces in Top Cell Jrshold
63 ~~Jrshields new welder~~
64 " design side seam weld
65 ~~skylights assembling room.~~
66 Cost producing Ni Fe etc Silver
67 Ralph long strip plater
68 Station Cell 3 high 3 wide
69 Fix changing at Barn
70 New Jobber for Ni filler
71 Ralph Test Cell Ribbon chips
72 Jed mem change test cell (not cell)
73 ~~Jed Bar cutting of Ni strip~~
74 Complete outfit Nickel filling
75 Change Cement mandrels
76 ~~Photo Shutter Sh for lights~~
77 Make Nickel flake
78 ~~Hand Fan wire put on Jubilee~~
79 Sig abt size Ni pt Eng Cement fobs
80 Glass balls Jenack

Nov 4th –

1 = Make chip to hold single particle NiOH watch glass + KOH, to watch change to $NiO_2$ which changing under Microscope OK tried Cat 1/2 gr.

Put out some pocket print strip on – from Gibbs, boil 2 in 20% 2 in 5% 2 in water changing KOH occasionally boiling 3 hours actually boiling – 2 do nothing with change 15 hours 100 – dessicate –

Mem. Dr Brandsham balls Was opened Cerebral opt back Crossed badly prosthesis Stuff came out from Illinois Came through to Phil – Burnt holes in Cornea Rubber nerve healed

Also nurse 4 jobs jerked tit on

Make Cup 6% Bi NiOH no graft 15 hours

Little Reg No
change 15 dressings
& keep them wet for several
days. Use to refill them
all in one jar,

Make up Gibbs cell 6 x 8 plate
put in KMnO4 & keep 17°
for 48 hours. 20% KOH.
Change Solution every 12 hours

Finger nails 8 x 2 flake
Molecules, 150 Cor -
Soaken Strong Hypo - before
running

Feby 7 1905

Try reversing old pocket 24 hours
then Bromine water to Eat wom
out must touch metal or
dont think Pb will hurt metal this
Mg flakes when Pb all gone
cured further out by nothing
with Pb on Metals Iron flakes

Get chimneys of Cleveland
Lamp Mfgr.
Get some pure glycerine, also
Grape sugar, Honey.
Caramel

Make some Mg flake Coated
Silver on both sides.

Ralph. 72 tests
6 8 10 12 & 15 p/
Mg

Hagen

Reverse cyl iron + Cat
out all cyl By Pressure
see how it rises —

See Ferrous Can get out
Iron many No Hg
Except $HgCl_2$ +
$NH_3$ Strip, Chg fe thin
take out & wash

Chloride Iron
pass H over + Volatilize
as HCl, absorb in Water —
tell Ralph —

Oxychloride $NH_4$
Unlike $NH_4Cl$ decomposes
lot of $Hg$ vapor —
This would after
drying — swell in porcelain

Could regularly Chg current
+ swell to get pure
porosity —

Chloride $NH_4$, Volatilize
— open Chg tube
moisture gets — Can I
be reduced Cong H. to
get flake —

Prep MOH Pour NaOH +
seeds Mother liquor —
then spin dry but still chloride
then put in Cyl + let
dry then press + compact
then wash out water
till SO4 free. then Cake
no grap —
also powder Coat Metal flake
moisture — press + weigh
press + recompact —

Antimonide Ni thin plates
press 2 at Ni / 1 at 3b –
Wells 316 a Con. –

6% Bi ppt with Ni –
wet process washed
dried – powdered – 8 g
flake not ~~[illegible]~~
2 Cupro / one gram
175 ~~Grams~~ – 0.003 flake

dilute 9% –

Mercuba 0.2 bicarbonate
to purify then ~~[illegible]~~
Redistill H + use Hg –

See J Gubkin
Annal Physik Chem [2]
32 – p 114 Neu Cloch

making films

Edwd C Bousfil 1888
p 101 Soap Cement
for securing from surfaces of
a Coating of Dryed
on glass & gives
film – Ag & Pt film –
74 – Ni – Wartha –

Basic Mercuric Salicylate
Salm Hott without change
in pp by acids including $CO_2$

Lagout J Pharm Chim 1903
VII 17 – 412 416

Ni Reduced by H
then thin cup. film Hott
wizsky & Zagle – formed by
current.

Impressing - malleable.
Mn folum 0002
0003
0004
0005

Oxide Mn in Cup prepared & colorless Reduced by H.
then MnOH, got Mn by Soaking

Flake Mn Mallinckrodt - 842
first minimum Mn lacquer
2 ½ g 2 1 3/4 1 ½
1 ¼ grams. Can dilute with water to end mix
try both ways -

Cup in good with powdered K Sulfate proper weight powdered then Compt Boring, then dissolved out. Cut half size at end force in MnOH
Mn Sh + close hole

Cup with powdered (Deliquesced) Sulphate Mn Compt. then suspend in KH-gas - dilute another - KOH. also Alcohol with KOH, if well boiled to Sulfate. Sulfate K etc

New Idea -
Parchment Cup electrode in Cup KOH, Ferro Cup K - etc.
Concentration of Ferro of inside parchment and depolarizer -

Possibly KOH saturated Ferro + parchment
Cup Solid Ferro.

Molasses of Lake No 882
dust disposes of. Electrolyte
phenolyte makes slippery

Molasses Flake No -
Nimine 10 days
after final corrugated -

Phan No Off. 175 gm
Mrs 150 mesh -
10 days nimine -
dettto Dep - through
200 mesh - 10 days
Nimine -

flake graf loose
with Sulphate K
1½ gram - Corrug
then dissolve out
then dip 20 hours Nimine

Make Chlorical powder
powder No 0 H 2 200
paste into Cargo sec of
Corrugate -

Pp Sul Ni Green 80H, mix
then dry electrolyte -
powder & use in Cargo
Soak out K SO4

dettto Molasses v Flake No -

Oxalate No - 2 gram
boil in 80H, then dry
& Recorrugate -

Phos Ammonium Borate
Chloride 1

Thus grind Ni Red by
H - K Cy in KOH,
acc of gent analysis -

Ni amalgam separated
out by precipitate - acc of
gent analysis -

Try group Bromides
K in KOH -

group grids soaked
Very strong KBr for
24 hours then put
in KOH & chgs immediately

Chargs a group
+ discharg in 33 %
till it shows 60 %
B Mn - after discharg
Chargs [illegible]

Leave KOH in ~~Soaking~~
~~Soaking till goes~~
~~Half out~~, dry in dry
take out powder &
put in new Cupro
Comp Reg - Run in
21 % max as Ni 203
Combine KOH Elecolysing
This alone renders swell &
give good porosity -

also Oxalate Ni also
Comb Ni is as light -
respec Comb - make 1 gram
Cups High respective by H
in Cups & Non-fill pores
by allowing soak of
Ni Soln - KOH or Nitrate.

also powdered Comb Ni
Red by H, or Hempt
in Cups & heat to
fill pores - 33 % -

Will Carb Ni powder
be decomp by Evap
Ammonia — try,

~~Precip. Ni from Sol.~~

Set up in Precision room
Jar & strips to make $NiOH$
by alternating Current
Look that my chemist
patent & Heat, see if
Camfield the battery
he gives me — get copy
Nat patent.

Suppose Carb Ni is
acted on by Bathipsonic
will it go quickly
Suppose B. Ev by Electric,

Try & work up Electric
Method of making $Ni\,O_2$
that flocks & depos
coll/ made stronger
Must be slightly
alkaline,

See if it is possible to
make flocks sulfide Ni
by acting on Ni flocks
by $H_2S$ dry or that
it may be that there is
too great a drop out
$Ni\,O_2$ & a partial but get
secondary action &
therefore in auto heights
Resistance flocks —

Possibly Ni film Cond
be partly changed to
a Nitride they dell
Conduct E.

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Examine those not on
Endurance of Cups
plated Cd Cu Fe &c
aq —

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Write Geo White get
0.05 strip right
width ~~Mr Freeman~~
also data price etc

so Ferro + Ferric Cy of
Mg - Bi decomposed
Ca - by KOH ~~good~~
could be used as Gallery

Ferri of any organic -

Put highly polished
Ni strips in KOH
100cc containing 5 grms
Aluminum -
dissolve 3 grms KI
Note what current
does to surface -

As Vanadium kills Fe
by depositing probably
Copper or Ni flakes
Could be deposited too
by Va which is an
Conductor (KC) the more
a Di ox are cathodes
the metal doesn't deposit

Try purchased Ni strip
a Vd 50 Volts see
results,

Nickplate rolled lengthwise
both ways for making flakes
~~[illegible]~~ to flake well
not be fld

Investigate a high Cap
33% chrome Ni
without soaking much
KOH only to see
if still lumpy dont
dry too nicely if any

A group chg on 21
dis on 33 / 9 —

another chg + dis
twice on 21 & dis 33
once —

be sure make a
group with skimming
solid — with + without
graphite —

Chg + dis then chg
on 21 a group
+ then chg with
KOH on + powder cover
+ put in new cups

ditto get all KOH
out —

ditto ~~dis~~ KOH in
not dis & dis chg 21 ...

ditto wash out in alcohol

ditto chg + dis 33 —
wash out in alcohol &
put new cups —

ditto chg dis & chg 33
wash out alcohol —

Chg + dis 21 wash out
all KOH by alcohol +
rerun without putting
in new cups —

ditto chg dis + chg

ditto 33 1/2 chg + dis

ditto 33 1/2 ch dis + C

ditto 6 1/2 B1 in MOH
chg + dis, wash alc
& put new cups

ditto chg dis + ch + al
new cups —

Boil in KOH 5% old
26 Cell Cups. See if get
radicles out — also
soak alcohol warm dry
out KOH, remove mat
very carefully — weigh or
put in new Cups —

Save cup & put new mat
in old Cups —

Chg in 24 wait 24 hours
drain chg. then change
night & morning & wait
after 24 chg 24 hours
then to clean KOH
soak in —

Run a Course on
Microbiology Cults
Hall do it
Compare with my

Make another
6 grams Ni Obl.
to get liquid electrolyte
also one with 10 grams
Hodges special cups!

Make fresh Ni Malachite
to grow Cake growth —
get liquid Elec
Hodges special cups

Malachite 2 grams Ni filter —
SP 100 Cor 150 then soak —

group 2 cups on gr.
Reg. quest to W women
to chg to 33% for
Cell Cults —

Acifate Ni dissolved in dilute acid, then Chlorine to peroxidize Ni or then KOH & then heat to get nontoxic $Ni_2O_3$

Only Ni Chl in glacial acetic a + chlorinate

Make group green green then 2 g mesh 5 gram paper empty acc if get greater output than with 3 —

See Hallend about Endum of chrom peak get the chg + 2 to off if he gives me meet to see of chg off —

Glacial Medical Separated by Hypo or Chlorinated —

Some green KOH by precip sulphate so then so always 33% excess of KOH when fully pp — put S sulfate in 40% in amed shiam, when it gets to 33 free KOH. Add more KOH + go on

Try then group green no graf also done with graf —

3 gm (green chg 75 hours only 1 to 200 m ch and then Change to 75 hour take out 2 to. then on 3 → chg take out to 75 + run Ring

flake Ni plated
both Iodes Copper
also Silver so
drop Ent. Bennett

Plate Thorn
not affected KOH,
Can use Crude
mix from Monopth.

Ralph does fail
make strength Cobalt
Red by H for 4
groups —
With + with Hg as
from — Myself
graphite for Ni —

just the thing, Cups
heavily plated with
Cobalt & powdered —
fall Ent. OK —

If possible make a group
with period Magnesium dozen
and Nickel Reg. Cups both
tops & bottom, plain grey
also a Reg mix —

The very Cobalt Hoff
got which expensively with
NaCl + KOH.
This stripped by a person
when dried —!

Can Nickel be
deposited from
Alkaline solution
with Chrome
possibly in powder

The greater the Nickel surface outside the cups the less will be the gain internally when covering when the swell –

Benzol & Resin to stick flake Ni on –

Alcohol & shellac

(Benzol & Cook tar pitch follows)

Gutta & Benzol (follows)

Run Reg group with large Ni surface outside Cup but connected to it so internal gassing be diminished –

Make a reg rolled wet with Ni

Ralph reduce some Ni low temp from most basic Ni Compound that holds it shape by Carb.

Try 7 & 8 flake Ni wet Sol KOH, rolled –

Temper very 2 gms Nickel from flake Ni through 50 to 100 mesh –

ditto 80 120, mesh –

It is probable that Carb Ni acted on by Hypo the CH taking place of Carbonyl will still preserve pieces from crumbling, yours for ever yet – probably Oxalate or other salt, which can be Oxidized out by Hypo – should be no grade feldspate in Hypo –

Carb Ni in greed of then treat Hypo –

OVH

Dimm-dessy Cross
from our Shell d
Sleiwantoville
imported —
Those mon present
growing

Set up 2 thin
sheets 003 manganese
in 21% ⅔ iron
Continuously
see of Ol Stole —

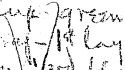
Magnesium Copper
smooth Rock,
but Tin very thin

Burnish Ni Red by
H-to flake & also
thro Sulfo-Sulfuric &
with Superficial
movement Can fur
a Ni Satt gen 200
mesh & fabricate
same & Red by
H & burnish flat
or differentiation
ing

Plate Cop tough
than brass with
Ni both sides
200 3 Cop 40000 Ni
Lock side —

Buy Magnesium powder
& burn for three
different cells -

Reg Cup green
No good - 1st layer
green - 2nd & third
then layer Mag Dy
~~[illegible]~~ 1/3 then 1/3
green




Mag D absorb
KOH & give it out
2 gram green

See Dyer file flake
Ni plated, till burn
out jumper plating
Graphite - also fake
graf split +
Rating bad -

Note Benjamin
Heat drawer Can
No adhesion of the
plated & welded
& Tops Can be elec W
but that is of
Course more weight

Have Ralph send
up the Cells
bottles Cyanamy
the balance of
the Bismuth Mgt —

See if Cupric ox.
Scales Conduct &

Can ppt by Sulphide
the Ni by adding
Yellow Sulphide K
Check by results

Ferrously by Elec
distill in Hydrogen
not pyrophoric —

Mossan says the Monoxide
by reduction is green
when cold yellow when
hot & readily absorbs
Ox at ord temp
if heated in air burns
black 350 400, C
at 600 it is reconverted
to monoxide
Says Monoxide from Vicat
Salt with NH4
Vol 40 C S jnl 77

To make Hydrate
from Na-Oxide by
passing air over it
which air is warm &

is fried from $Cl_2$ +
Saturated or not with
water V. [illegible] Before
use dry [illegible]

Magnesium can be
distilled in Vac
deposited by Electroant
Crystal like
Silver

degas of $N_2$ on the
Aluminum paint
powder & then Eat
away the Al by
KOH — distill In

Try def metals
Cu Bi Fe
in yellow sulphide &
then plate on see
if strips.

Use of aluminum powder
paint will reduce
any Nickel solution
to ~~replace~~ Al by
$N_i$.

Possibly Aluminum paint
powder coated by paint
on [illegible] $N_i$ +
then paint in Cryst
reduced by a Nickel
Salt, or plated on
+ Al dissolved out
+ Recommended

Reverse a KCy
(strong) & HgCy
grove so no
plate Ni on
grove then
Book out KCy
repeat new Fe Sn

find some Ni Salt
that has uniform
Crystal pass 100
Mesh red by H2
& Roll out to
foils —

Try Ammonia to
bring out 26 cell
book

The particles of
Nickel for coating
by H & roll
shaped for about
.004 cubes to
roll out 25 To 30 foils
+ .0001 thick -

Plate Cop then Ni
then C & roll out
and something
Eat Copper

Carbon tissue paper
high temp —
plate with Ni —
burn out in Reduction
furnace & then pass
H without moving it.

ditto charcoal
carbon high temp
plate with thick
bottom finish, then
burn in furnace by
H in situ —

Otto Brown
Cathode,

possibly plate
Cop with Ni then
reverse 1/10 time then
plate copper 20/1000
thick or less & then
wall wood all
separate — Ni not stick
to oxid Ni —
possibly expose to air
do it — or putting cylinder
in Hypo for seconds at
each plating —

possibly a very slightly
conducting organic
liquid over a plate
high [illegible] very valuable
guide [illegible]

Manson annual C+Phys.
[5] 21, 199 225

~~NiO on Ni(OH)₂ also~~
Hydrated or Anhy $Ni_2O_3$
heated 190° in H
Red to grey Magnetic OX
at little high temp
yellow green Mon OX
this unchanged so no
further change
at 200° C but at 230–240
is reduced to metallic
Ni Monox (thus obtained)
green when cold
yellow when hot
it readily absorbs
Ox at ord temp

Make groups in which
Ni Reagent is placed
in Cup so it will pack
naturally closed

also Group frozen
Hydrate – Tuning fork

This irregularity in
Cells may be due
to some jarring may
in (10) feed of cell
machine + may
better at time –

Possibly this jarring
action would be
a good theory on
Reg filler –

Group gapping in
water - white
Grass covered in
water

Group Wax moods
wet pretty lakes &
paraded in - gained

Nitrate deposition
No from the Cambrian
into Lower 666
Contains a Microcosm
Chemical or Brown
Tissue paper Cambrian
& Membrane not &
next bigh -

Cylinder of glass hard
steel - plate Ni
0001 rubber scraper
& scraper off in bath -

Nimine group on
a polished cylinder
or plate of glass -
form film & read by
H -

Powder) Spiegl Person
+ dope for 7½ -

Magnesite powder
+ dope -

Split Wheat by
Molasses or Rum
& Nemine it -

Urea unsolved make it tough —

Syrup of Nitrate Ag gradually heat of Varnish film on glass, probably shrinks off — Red light —

Varnish of acetate nickel Dry + Iron heat, ~~or decomp~~ by R by H

porously glass greased etc for drying Iunium ~~Sta~~ decomposition etc

Squirt Pleasmate ND of Sleamlu into Water — decomp R by H

Squirt nicelay WOH into hitare or hot oil — R light or mix chuck + dry

Squeeze Co Off into
Sulph Ni -
Squeeze jelly like
Carb Ni. into
Dil - water
gradually heavy

Reduces Co/Ni to
Metallic, then
put Ammonia
into a Ni Solution
& reduce the Ni
to Metallic,
Actually Ha (Mica)

Citrate Ni is jelly
dries to olive green
film

Perhaps Nickel
put on granite thread
& stirred with
ground mica
with hot air
that surface Co
Cooled without
Mica adhering
then rub by H hot
heat & deep Mica

Probably a phenol
Cylinder of
Compressed $NH_3(OH)$ ?
Could be made that
Consistence Sugar,
Morning [illegible]
+ lamp black

Ammonia mixed beautiful
film - float on Hg
also prepared of Cu
also paraffined glass

Dip a 20 speck
screen in $NH_4Cl$
+ dry - Make film
to be Rough

Make 66% Zn
33% Cu amalgam
Take detail the
pebbly stop fd crystals
+ be opened - distilled
in H2 down open

Perhaps by using
Tin Lead Zinc Cd
Cu Ag + pellets
to form Compound
amalgam it well
not crystalize or
Make a good
phenol Reason
Cylinder by
pressure

Sequent $NiCl_2$ Mush
with alcohol to set
it.

~~Green~~ Cobalto organic
of Nickel Dol in $NH_4$
when slowly evap
gives Blue Rhombic Hyperbolic
Scales —

Green

Ammonio-ferrous
Orthophosphate.
true Lamellar
When boiled with KOH
decomposes leaving
Ferroso-ferric oxide
at same time preserving
the form of the original
flake —

Ferric Ethyl phosphate
Straw yellow film

Nickel Di Ethyl phosphate
Crystalizes in groups
of Lamellae

K & Na Salts of Phthalic a
Crystal in Scales —
what its Salts Scaly
try Ni

Naphthenates is a
Nearly yellow flakes

Uranyl Formate Ni
gives Green to Brown
Scales Mem Pl

Uranyl Perchlorate M
forms Scales

Nitrite Cu Lemanie.

Potassium Chromic
Nickel Nitrite
Microscopic tablets

Scales Xanthates

Look over X-ray Cryst

Sulphur by melt Ni
Crystallization process

Ammonia acetate
to melt Sulph test
to melt double
Sulph Cryst on
Scales

Ammonia Cuprous
Sulphite, Scales

Ammonia Sulphite
Medical Cryst pp

Amyl sulphuric or
flake Sulph

Methyl sulphuric or
ditto

Methyl Sulphuric
Cu Sulph, Scales
other also

Mets Methyl
Sulphuric or
flaky balls

Phenylsulphurous
Hydrate or
Sulphophenic Ac.
Salts of Zinc

Ammonium Sulphuric Ac.
Neutral salt Salts
Sources of Ammonia

Co Salt Lamanno -
Cu Tablets,
Mn Salt Lamanno -

Ammonium Hyposulphite
Mn Cry powder

Ammonium
Bithionate Mn
Tablets permanent

Potassium Green Cryst
powder

Thianesic Ac
Cu Salt Lamanno
Neutral salt Salts
Lamanno -

Methylmercaptan Mn
Tablets -

Adipic Acid
Nickel S Scales

Bismuth among Chlorides
25 to 30 grms per litre
Cold least Sat plate
Bismuth -

to make per ox Electrolyte
use Alkaline Sat of
Cyanide Tartrate
Not ~~Sodium Tartrate~~
Try Citrate -
dissolve in DX Mint
only slightly soluble
to be opened -

Wormwater
Zeitschrift f Chem
V 11 105
Ref Ann Chem
1909

good
Nickel Cyanide forms
double Cyanides
with organic bases
all highly crystalline
Working double salt
Cy N Ba + sulphate of
base, (c) Nickel comp
for Co (impossible)
work which Ni

The way the Co double salt and
was by using Sulphate Co
this linked with
Barium Carb Impure Ferro
& Cyanide for passed
into white ppt converted
into Cobalticyanide of
Barium - this treated
with Quantum
Sulphate gave

the double salt very
slightly soluble in water
it was hot, on cooling
Crystalized out.

Lead use Cylinder
Zinc + paint with
Bergmann paint was
top less surface.
Local action + Res
just same —

possibly Mosaic
gold Tin sulphide
Tin by heating
with some Hg
Salt Exchange?
a form Sulphide
Hg - CuSO4
other Metals Gold

see fig. flake Mg from
alcohol will swell up on
heating if by these —
graphite also

Ferric from Oxalate.
~~[illegible]~~
~~[illegible]~~
at 440 ferrous oxalate
obtained in 6 hours
Nickelic Fe in 12 hours
at 350 or quite soon
in 1 hour if ferrous of
ten hours a nickellic
36 hours —

Thus for Ratio to
get Nickellic more
pyro but fuse

Nunnie Lange
Surface Ret at scale
on Cop + 91 cm
Continuously + put
in water or alcohol
dry –

Copper commenced in
yellow NH4 Sulfate
with considerable Sulfur
added Coated
Crust of CuS. Easily
Separated from
the metal + easily
+ uneven

get from Merck
Mn Br Mn I
Scales –

Mn Cu6 on NH4
forms crystals
by boiling at NH3
(white crystal layer)
by passing persulph.
of Pot or Na
with the ammonia
of Mn leaves
Crystalline deposit
Na

good

Perhaps deposited
Peroxide under reaction
off smooth plate

pass dry $H_2S$ over
Anhyd $CoCl_2$ Ni
from HCl & heat
Sulphide Ni —
ditto Br Ni —
absorb $H_2O$ —
Roast red hot —
pass $H_2S$ over
Surface Nickel
Silicon —

Stir Mica with
Saturated Nickel
when dry add
more until thick
Enough —

try put NaCl only
in Conc Thoroughly [illegible]

Nickel Oxide
dissolves in
Sodium Pot
Melt on wire and
fused in presence
NaCl — Crystalizes
pale yellow Micaceous
Prisms — Nickel
gives dif crystal
[illegible] 5.8 1 [illegible] 1890 CSN

$2NiO.K_2O, As_2O_5$
$2NiO\,Na_2O\,As_2O_5$

Gressin Lemann

Micaceous Limonite

Liferzee Compt R
110 – 405 408 –

Syrupy Stannate Ni. Melt
blow like soap bubbles
then – manganate –

Called all the acids
in Lab – make Conc
Hot Solution Ni
& Crystalize –

to obtain Ni salts by
fusion use NiCl
and the alkaline
salt of the acid
with excess Chloride
Na –

Peptize Cornbin with
Ni salts to give def.
Crystals –

Salts which act
as Binders or by
Ignition when
ignited to make
porous Ni Oxide
Lumps –
Formic Ni. binder +
putty –
Nitrochloroacetate Ni
chlo
Sulfo Vinosum Ni
hunger research about
putty Gest. LLK

Chloro Croloric
four dont melt.
Phthalic [illegible]
Tannic, bunder —
Pharaoh's Soap —

Sheet Iron [illegible]
Silver, plum and platinum
flakes, also Delly
~~[illegible]~~ Palladium plum —
Rare metals plating
Smoke groups 7+3

Plate iron with
Vanadium, (H) $NH_4VO_3$
After polished iron
smelted aby Electric fo
form Vanadate in
see of its Conductiv
also Ni-Co + Other

Make a 7+3
0002 - flake Ni
Run in Hydrogen
grove good fused
prod — Ni flake
Rolled Prog with
water - 7+3 —
also with Reg
KOH rolled —

Treated graffite, rolled
$H_2O$ also KOH,
Edison also make
finger mix all
7+3 —

Prod. Cameron on
the 2nd Ni foil cake
Coll 3 mesh
grace of Cam [illegible]
Capacity —
Warren under Mag
particle laying on
plated Ni, silver
Copper & other
metals — also
Carbon — graphite [illegible]

Mix 8+2 of which
2 to [illegible]
with mesh Ni — dry
thru thr 20 mesh
3+2 cake —

Thus it is see of particles
disconnected thru mix
has nothing to do with it

also, 8+2 Lattice
Magnesia equal —

Spong Ni foil cake gives
nitride — also sulphur
slightly ~~[illegible]~~

Weak 2 mesh
Reg mix with mesh
cups coated with
Anhydrous $Ni_2O_3$
by painting with [illegible]
& heating not too
high — also 2
with green —
Think Anhy $Ni_2O_3$
to contribute

to ascertain [illegible]
make Magnesia
Carbo, with [illegible]
250 almost [illegible] of
Dark strong $HNO_3$
& bring to [illegible]
Water [illegible] test it

[illegible]
Mercuric Hg acc
of Cubic [illegible] Crystal

get several books
Silver foil to
test as to take 5 hrs
for a group

Cost for 2 cells
Cupro used [illegible]
Molasses - [illegible]

Would make bad
of [illegible] 4 + 3 group

Oxide Mg + Water chf Mg
as it [illegible] [illegible] combined
also

Chalk - Sr & Carbo
find a accident the base of
which [illegible] 2 [illegible] - Pb [illegible]
Cd - Sb
Mg Ox [illegible]
Bases, Bases - Mercurous
[illegible]

Oxide Zn - Mn, Sb.
Cd, Zn dust

40 mesh [illegible]
Red [illegible] H, [illegible]
Group - [illegible] - [illegible]
Hydro by Current

14th Rem Malaman flasks
[illegible]

| | | | | |
|---|---|---|---|---|
| 82.22 | 293 | | | |
| 82 23 | 337 | | | |
| 82 24 | 267 | | | |
| 82 25 | 217 | | | |
| 82 26 | 337 | | | |

Another Group –
Reg E 13. No 1 Burned in
a Com 175° for 20 amp
for 24 hours

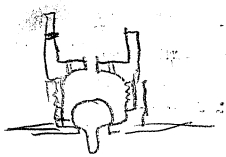
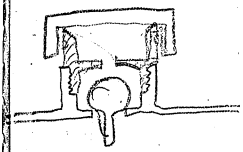
Another group 48 hour
Use Regular room no
breakd —

2 more groups as
above but with iron
breakd in Com heat
175° Reversed
24 hours 30 amp

2 more groups
with 70° breakd Rev
+ then Reversed to
Cure & not breakd
24 hours 30 amp

Use in above CP
Mached Sheet + Rivets

8) 50" / 7 10 cells

1.30 / 72 x 8

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